Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

GENERAL NOTES.

Personal Scale.—After making about three thousand photometric settings, it occurred to the writer to determine his "personal scale" in the estimation of tenths of a division, as formerly done by Dr. Frank Schlesinger and published in this journal. (Vol. XV, p. 207.) During the past year I have also made time observations and clock-comparisons which give data for similar determinations.

The photometer readings were made on a circle divided into single degrees. The observer's attention was fixed on making sure of the whole number of degrees, and no great pains were taken to determine the tenth. The series of readings was divided into six sets of 500. Below is given a table of percentages of times that each tenth was estimated. The original per cents and means were taken one place farther, but it seems best to round off the results:—

Tenths.	First 500.	Second 500.	Third 500.	Fourth 500.	Fifth 500.	Sixth 500.	Mean.
.0	28	28	26	25	21	25	25
.1	4	6	3	5	7	6	5
.2	10	8	11	8	7	5	8
.3	8	6	8	7	11	9	8
.4	11	10	11	17	11	9	12
.5	13	11	9	14	13	13	12
.6	10	10	8	8	10	12	10
.7	4	4	7	5	7	7	6
.8	7	13	12	9	9	10	10
.9	5	4	5	2	4	4	4
	100	100	100	100	100	100	100

All of the above estimates were made before the observer had thought whether he was giving preference to any tenth or not. I might have foretold that there would be an excess of zeros, but it was a surprise to find so many. I seem to have a habit of rounding off a one or a nine to a zero. A preponderance of twos and eights over the adjacent odd digits, would also be expected, as my habit in computing is to choose the even number in dropping a final five.

The estimates in photometer-readings were made when the observer had plenty of time, but was paying little attention to the exact tenth. We might therefore expect an entirely different "personal scale" in observing eye-and-ear transits. I have counted the tenths in a number of time-observations, made with a three-inch transit throughout a period which included that of the photometric work. In the time series the principal aim was to determine the tenth of a second by estimates of spaces on each side of a wire. The chronometer beats half seconds, but the space was estimated at each second. The observations have been grouped according to declination, the first group containing some stars south of the equator.

Declination. Tenths.	S. of 40°. 352 Transits.	40°-60°. 163 Transits.	60°-80°. 263 Transits.
.0	25	27	32
.1	10	4	5
.2	8	5	11
.3	4	6	3
.4	9	8	4
.5	18	28	28
.6	5	5	4
.7	3	5	3
.8	11	7	11
.9	7	5	3
	100	100	100

There are more zeros and fives, especially in the case of the slow north stars, where many estimates could only be made to the nearest half-second.

It is my daily habit to compare a mean time with a sidereal clock. Each clock beats seconds and the difference is estimated to tenths. There was always plenty of time for the estimate, but I did not wait for the coincidence of beats. The results of the two other series are printed again for comparison with the clock set.

Tenths.	Photometer. 3,000 Readings.	Time Stars. S. of 40°. 352 Transits.	Clocks. 246 Comparisons.
.0	25	25	30
.1	5	10	3
.2	8	8	11
.3	8	4	10
.4	12	9	5
.5	12	18	9
.6	10	5	9
.7	6	3	9
.8	10	11	12
.9	4	7	6
	100	100	100

The photometer readings were made wholly with the eye, the transits with eye and ear; and the clock-comparisons with ear alone. The conditions being so different, we would expect the "scales" to be very unlike. I see no reason for endeavoring to make the scale uniform, but for a time I shall probably remember and not record so many zeros, and perhaps be careful to see more sevens. JOEL STEBBINS.

UNIVERSITY OF ILLINOIS OBSERVATORY, February, 1905.

At the meeting of the American Association for the Advancement of Science, held in Philadelphia during Convocation Week, Professor ALEXANDER ZIWET, of the University of Michigan, presided over Section A, Mathematics and Astronomy. Professor W. S. EICHELBERGER, of the Naval Observatory, was elected vice-president of the section for the next meeting. Following is a list of the astronomical papers presented at the meeting:—

Synchronous Variations in Solar and Meteorological Phenomena: H. W. CLOUGH, U. S. Weather Bureau, Washington, D. C.

Temperature Corrections of the Zenith Telescope Micrometer, Flower Astronomical Observatory: C. L. DOOLITTLE, University of Pennsylvania.

Results from Observations of the Sun, Moon, and Planets for Twenty-six Years: J. R. EASTMAN, Andover, N. H.

Determination of the Solar Rotation Period from Flocculi Positions: PHILIP FOX, Yerkes Observatory.

The Computation of the Deflections of the Vertical Due to the Topography Surrounding the Stations: J. F. HAYFORD, U. S. Coast and Geodetic Survey, Washington, D. C.

On Systematic Errors in Determining Variations of Latitude: Some Experiments on the Distortion of Photographic Films: FRANK SCHLESINGER, Yerkes Observatory.

Bibliography and Classification of Mathematical and Astronomical Literature at the Library of Congress: J. D. THOMSON, Library of Congress, Washington, D. C.

On an Optical Method of Radial Adjustment of the Axes of the Trucks of a Large Observatory Dome: DAVID TODD, Director of Amherst College Observatory.

The Application of MAYER'S Formula to the Determination of the Errors of the Equatorial: L. G. WELD, State University of Iowa.

The annual general meeting of the Royal Astronomical Society took place in London on February 10th, when the American Ambassador, the Hon. J. H. CHOATE, attended to receive the Society's gold medal, which has this year been awarded to Professor LEWIS BOSS, director of the Dudley Observatory, Albany, New York, for his long-continued work on "The Positions and Proper Motions of Fundamental Stars." Professor Boss has distinguished himself as an astronomer not only in America, but in other countries, where he has been elected to the membership of prominent scientific associations, notably the Royal Astronomical Society, the National Academy of Sciences, and the Astronomische Gesellschaft, Leipzig. He is the author of numerous valuable monographs on astronomical topics.

The Jackson-Gwilt medal of the Society, which is awarded occasionally for work of the less ambitious kind, was given this year to Mr. JOHN TEBBUTT, an amateur astronomer, of New South Wales, who has maintained an observatory for forty years.

The assistant secretary, Mr. WESLEY, was presented with a purse of money, as a token of the Society's appreciation of his work during the thirty years he has now held his office.—*London Standard.*

The sixth meeting of the Astronomical and Astrophysical Society of America was held in Philadelphia during Convocation Week, in affiliation with the American Association for the Advancement of Science. Professor SIMON NEWCOMB was again re-elected president of the Society. The list of papers presented, abstracts of which may be found in *Science* for March 17th, was as follows:—

The Constant of Aberration: C. L. DOOLITTLE.
A Test of the Transit Micrometer: JOHN F. HAYFORD.
Remeasurement of the Hough Double Stars: ERIC DOOLITTLE.
Novel Design for Rotating Dome Track: D. P. TODD.
A Study of Driving-Worms of Photographic Telescopes: E. S. KING.
The Reflex Zenith Tube: C. L. DOOLITTLE.
Variations of the Bright Hydrogen Lines in Stellar Spectra: ANNIE J. CANNON.
Variable Stars in Large Nebulous Regions: HENRIETTA S. LEAVITT.
Planetary Spectrograms, the Work of V. M. SLIPHER and C. O. LAMPLAND: PERCIVAL LOWELL.
The Canals of *Mars:* an Investigation of Their Objectivity: PERCIVAL LOWELL.
Note on Three Solar Periods: FRANK H. BIGELOW.
The Coordination of Visual and Photographic Star Magnitudes: JOHN A. PARKHURST.
The Quadruple System of *Alpha Geminorum*: HEBER D. CURTIS.
Use of the Method of Least Squares to Decide Between Conflicting Hypotheses: HAROLD JACOBY.
Tables for the Reduction of Astronomical Photographs: HAROLD JACOBY.
Recent Researches of the Henry Draper Memorial: EDWARD C. PICKERING.
Calibration of a Photographic Photometer Wedge: ORMOND STONE.
Note on Two Variable-Star Catalogues: J. G. HAGEN.
Useful Work for a Small Equatorial: Discussion, opened by EDWARD C. PICKERING.

The following notes have been taken from recent numbers of *Science:*—

The Observatory of Amherst College is to have a new equatorial telescope of eighteen inches aperture. The glass for the objective, which is now completed, was cast by MANTOIS of Paris, and the lenses were ground by Mr. C. A. R. LUNDIN, optical expert of the firm of Alvan Clark & Sons.

Professor A. AUWERS, the eminent astronomer of Berlin, has been elected an honorary member of the St. Petersburg Academy of Sciences.

M. PAUL HENRY, the French astronomer, died on January 4th, as a result, it is said, of a cold in the Alpine Observatory on Grand-Montrouge. This was also the cause of the death of his brother PROSPER, who died in 1903. The brothers are well known for the work that they carried on together in astronomical photography, especially in connection with the great international chart of the heavens.

Professor ERNST ABBE, of Jena, well known for his important improvements in the microscope and other optical instruments, which he constructed in partnership with CARL ZEISS, died on January 16th at the age of sixty-four years.

M. JANSSEN, director of the Observatory at Meudon, has been elected a member of the St. Petersburg Academy of Sciences.

M. S. J. P. FOLIE, honorary director of the Observatory of Brussels, died on January 29th, at the age of seventy-one years. The death is also announced of Professor T. BERTELLI, the Italian astronomer.

Dr. E. O. LOVETT, professor of mathematics of Princeton University, has been elected professor of astronomy to succeed Professor C. A. YOUNG, who has become professor emeritus.

Mr. EDWARD CROSSLEY, of Halifax, England, and a member of the Astronomical Society of the Pacific, died on January 21st in his sixty-third year. He had been three times Mayor of the borough, and was a Member of Parliament for seven years. Apart from his engrossing business pursuits, the late gentleman was devotedly attached to the study of astronomy, and was a Fellow of the Royal Astronomical Society. He will be best known on the Pacific Coast as the donor of the Crossley reflecting telescope at the Lick Observatory, with which much useful work in celestial photography has been accomplished; and it was by means of this instrument that the sixth and seventh satellites of *Jupiter* were discovered.

Royal Philosophical Society of Glasgow.—At a meeting of the Royal Philosophical Society of Glasgow—Dr. DAVID MURRAY presiding—Professor L. BECKER, Ph.D., delivered the centenary lecture on "The Progress of Astronomy in the Nineteenth Century." Treating of the constitution of the Sun, the lecturer explained the spectroscopic and photographic evidences which had led to present-day views regarding that subject. The whole body, he said, was considered to be in a gaseous state, pressure and temperature steadily increasing inwards. At the level of the Sun's visible outline, where the pressure of the gases is about five atmospheres, and the temperature six thousand degrees centigrade, the conditions are such that some of the gases, carried upwards by currents or explosions, condense and form clouds. From this sheet of clouds we receive our light and heat. Most of the elements occur in the solar atmosphere, but in the interior of the Sun they are probably in the state of combination. When by any cause the mixture of gases moves from the interior upwards, where pressure and temperature are less, dissociation will ensue resembling an explosion. Gases will rush to the surface, giving the appearance of a prominence, and cooling by expansion, clouds will be formed at a high level in the solar atmosphere. The eruption is analogous to a cyclone in our atmosphere, and it is accompanied by an anticyclone. The gases will become heated in their downward motion and dissolve the cloud sheet below. At the same time the withdrawal of matter below is followed by an inrush of gases from the surrounding regions. They will cool by expansion, and produce the comparatively dark layer which, viewed from the opening in the cloud sheet, appears as the dark background of a sun-spot. The corona which emerges from the solar atmosphere is supposed to consist of detached exceedingly small particles, which float near the Sun, their weight being balanced by the pressure of the light-rays. Negatively charged particles of a similar size are pushed into space by the light-rays, and they form the connection between solar activity and magnetic disturbances on the earth.—*The Scotsman.*

To be an Astronomer.—The late Dr. E. A. MEREDITH, one of the presidents of the Toronto Astronomical Society, said that Sir WILLIAM ROWAN HAMILTON, Astronomer Royal of Ireland, when asked, at a time when *Saturn* was favorably placed, if he had been observing that planet, replied, "No; he left that for others—the mathematics of astronomy were enough for him." So even Sir ISAAC NEWTON had FLAMSTEED make the lunar observations on which he depended for the verification of his theory of gravitation. One may be an astronomer without using the telescope. But if one desires to be an observational astronomer, he must, according to Dr. D. B. MARSH, of Hamilton, possess: (1) A sound physical frame; (2) Enthusiasm such that the cold of winter or the heat of summer, or even the feeling of weary bones by night or by day, will not prevent observation and making records thereof; (3) He must use faithfully what equipment he has and remove the word "can't" from his vocabulary; (4) Undertake work that seems to him difficult and stay with it until he has mastered it; then take up another problem and persevere with that likewise.—*From the Proceedings of the Royal Astronomical Society of Canada, 1902 and 1903.*

The Date of Easter in 1905.—The Prayer-Book rule for finding the date of Easter runs thus: "Easter-day is always the first Sunday after the full moon which happens upon, or next after, the twenty-first day of March; and if the full moon happens upon a Sunday, Easter-day is the Sunday after." But according to the almanacs the Moon is full at $4^h\ 56^m$, Greenwich mean time, on the morning of March 21, 1905. Why, then, is not Easter-day in 1905 the following Sunday—viz., March 26th—instead of April 23d, the date given in the almanacs? Is the Prayer-Book wrong, or is the Nautical Almanac wrong?

This is the dilemma that has been put to me by anxious inquirers, and as the misunderstanding seems prevalent, even amongst educated people, I should like to give a few words of explanation.

In the first place, I am happy to be able to give an assurance that in this particular instance neither of the authorities referred to above is wrong.

The explanation of the apparent contradiction is simply that a different "Moon" is referred to in the two cases. The "Moon" of the ecclesiastical calendar is an imaginary body, which is so controlled by specially constructed tables as to be "full" on a day (no attempt is made in the calendar, either in the date of the vernal equinox or in that of the full moons, to subdivide the day) not differing by more than two or three days at most from the date on which the actual Moon is full.

The adoption of the calendar Moon for such a purpose as fixing the date of Easter has certain practical advantages, such as applicability to every terrestrial longitude, that would not be present in the case of the actual Moon. Thus in the instance quoted above, in which the Moon is full at $4^h\ 56^m$ Greenwich time on the morning of March 21st, we see at once that for places adopting a time five hours west of Greenwich (the eastern standard time of the United States) this Moon would be full on March 20th. And so in the circumstances supposed Easter would be celebrated on a different date, depending on the adopted time at different meridians. This inconvenience is avoided by adopting the calendar Moon.

A very convenient expression for the date of the Easter full moon of the calendar is March (44 — epact), which gives the date directly when the epact is less than 24. When the epact is equal to or greater than 24, the date given by the formula is that of the preceding calendar full moon, and the Easter full moon is found by adding 29.

In 1905 the epact is 24. The calendar Moon is, therefore, full on March 20th, and again on April 18th. The latter then is the Easter full moon of the calendar, and Easter-day is the following Sunday, April 23d.—*A. M. W. Downing, in the Journal of the British Astronomical Association, Vol. 15, No. 3.*

Solar Eclipse Expedition.—An expedition from Indiana University, in charge of JOHN A. MILLER, Professor of Mechanics and Astronomy, and W. A. COGSHALL, Assistant Professor of Astronomy, will go to Spain to observe the total solar eclipse that occurs on August 30th. At some point in northeastern Spain, on a favorable site chosen by Professor A. F. KUERSTEINER, of the Department of Romance Languages, who is now in Spain, they will install their instruments. This temporary observatory will include a horizontal photographic telescope about seventy-five feet long, having an aperture of eight inches. Into this telescope the Sun's rays will be reflected by a mirror moving at such a rate that it will reflect rays in a constant direction. This telescope, with one exception, will have greater photographic efficiency than any telescope that has hitherto been used to photograph the Sun during a total eclipse, and is designed to secure photographs of the corona on a very larger scale.—*Science, March 17, 1905.*

Professor GEORGE E. HALE has resigned the directorship of the Yerkes Observatory, and Professor E. B. FROST has been appointed to the position.

Professor F. L. O. WADSWORTH has resigned the position of Director of the Allegheny Observatory and accepted the appointment of General Manager of the Pressed Prism Plate Glass Company of Morgantown, W. Va. Dr. FRANK SCHLESINGER, of Yerkes Observatory, becomes Professor WADSWORTH's successor in the directorship of the Allegheny Observatory.